

Ann KIEFER

Curriculum Vitae

CONTACT INFORMATION

INSTITUTION: Université du Luxembourg
FACULTY: Faculté des Sciences Humaines, des Sciences de l'Éducation
et des Sciences Sociales
DEPARTMENT: Luxembourg Institute of Educational Testing (LUCET)
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EDUCATION & ACADEMIC POSITIONS

JAN. 2021 - AUG. 2022	Postdoctoral Researcher, University of Luxembourg LUCET (Luxembourg Centre for Educational Testing) Position: STEM Expert
SEP. 2020 - JAN. 2021	Maternity Leave
OCT. 2019 - AUG. 2020	Postdoctoral Researcher, Vrije Universiteit Brussel Algebra Research Group (Prof. Eric Jespers) Position: Wetenschappelijk medewerker VUB
FEB. 2018 - SEP. 2019	Postdoctoral Research Fellow, Vrije Universiteit Brussel Algebra Research Group (Prof. Eric Jespers) Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)
NOV. 2017 - JAN. 2018	Maternity Leave
OCT. 2017	Postdoctoral Research Fellow, Vrije Universiteit Brussel Algebra Research Group (Prof. Eric Jespers) Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)
APR. 2016 - SEP. 2017	Postdoctoral Researcher, Universität Bielefeld Research Group of Prof. Christopher Voll Position: Wissenschaftliche Mitarbeiterin (FWO on pause)
JAN. 2015- MAR. 2016	Postdoctoral Researcher, Universität Bielefeld Research Group of Prof. Christopher Voll Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)
OCT. 2014 - DEC.2014	Postdoctoral Researcher, Université Fribourg Research Group of Prof. Ruth Kellerhals Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)
2010-2014	Ph.D. in Mathematics, Vrije Universiteit Brussel Title: <i>Units in integral group rings via fundamental domains and hyperbolic geometry</i> Advisor: Prof. Eric Jespers Co-advisor: Prof. Ángel del Río Grant: Fonds voor Wetenschappelijk Onderzoek (FWO)

2008-2010	Master in Mathematical Sciences, Université Libre de Bruxelles, Brussels Grade: summa cum laude Thesis: <i>Polyhedra Associated to Symmetric and Alternating Groups</i> Advisor: Prof. Dimitri Leemans
2005-2008	Bachelor in Mathematical Sciences, Université Libre de Bruxelles, Brussels Grade: summa cum laude

RESEARCH INTERESTS

- Group Theory: Discontinuous Actions of Groups on spaces (of constant and non-constant curvature), Vahlen Groups
- Ring Theory: Quaternion Algebras, Clifford Algebras
- Geometry: Hyperbolic Manifolds, Fundamental Domains
- Group Ring Theory: Units in Group Rings

PUBLICATIONS

Published

- [1] Andreas Bächle, Geoffrey Janssens, Eric Jespers, Ann Kiefer, and Doryan Temmerman. Abelianization and fixed point properties of units in integral group rings. *accepted in Mathematische Nachrichten*, 2021. [arXiv:1811.12184](https://arxiv.org/abs/1811.12184) [math.GR].
- [2] Ann Kiefer. On units in orders in 2-by-2 matrices over quaternion algebras with rational center. *Groups Geom. Dyn.*, 14(1):213–242, 2020.
- [3] E. Jespers, S. O. Juriaans, A. Kiefer, A. de A. e Silva, and A. C. Souza Filho. Dirichlet-Ford domains and double Dirichlet domains. *Bull. Belg. Math. Soc. Simon Stevin*, 23(3):465–479, 2016.
- [4] E. Jespers, A. Kiefer, and Á. del Río. Presentations of groups acting discontinuously on direct products of hyperbolic spaces. *Math. Comp.*, 85(301):2515–2552, 2016.
- [5] E. Jespers, A. Kiefer, and Á. del Río. Revisiting Poincaré’s Theorem on presentations of discontinuous groups via fundamental polyhedra. *Expo. Math.*, 33(4):401–430, 2015.
- [6] F. Eisele, A. Kiefer, and I. Van Gelder. Describing units of integral group rings up to commensurability. *J. Pure Appl. Algebra*, 219(7):2901–2916, 2015.
- [7] E. Jespers, S. O. Juriaans, A. Kiefer, A. de A. e Silva, and A. C. Souza Filho. From the Poincaré theorem to generators of the unit group of integral group rings of finite groups. *Math. Comp.*, 84(293):1489–1520, 2015.
- [8] Ann Kiefer and Dimitri Leemans. On pairs of commuting involutions in $\text{Sym}(n)$ and $\text{Alt}(n)$. *Comm. Algebra*, 41(12):4408–4418, 2013.
- [9] A. Kiefer and D. Leemans. On the number of abstract regular polytopes whose automorphism group is a Suzuki simple group $\text{Sz}(q)$. *J. Combin. Theory Ser. A*, 117(8):1248–1257, 2010.

Preprint

- [10] Andreas Bächle, Geoffrey Janssens, Eric Jespers, Ann Kiefer, and Doryan Temmerman. A dichotomy for integral group rings via higher modular groups as amalgamated products. *submitted*, 2018. [arXiv:1811.12226](https://arxiv.org/abs/1811.12226) [math.GR].

Outreach

- * P. Igodt and A. Kiefer. Sophie germain een onvoldoende bekende pionier. *Vector - Tijdschrift voor wiskundeonderwijs*, 2019.
- * A. Kiefer. Le théorème de Fermat vu par M. Le Blanc (Fermat's Theorem seen by M. Le Blanc). *Brussels Summer School of Mathematics, Notes de la cinquième BSSM*, pages 51–65, 2012.

HONOURS, AWARDS AND GRANTS

- 2014 FONDS VOOR WETENSCHAPPELIJK ONDERZOEK (FWO)
3 year Research Fellowship, 2014-2017
- 2010 FONDS VOOR WETENSCHAPPELIJK ONDERZOEK (FWO)
4 year Research Fellowship, 2010-2014
- 2010 FONDS NATIONAL DE LA RECHERCHE SCIENTIFIQUE (FNRS)
Research Fellowship (not accepted because of acceptance of FWO-grant)
- 2008 RUTH AND JOE GANI PRIZE IN PROBABILITY
Award for the best student in the Probability and Statistic Classes
of the Bachelor degree at the Université Libre de Bruxelles
- 2006 PRIX FLEURICE MERCIER
Award for best overall student of the Faculty of Science of the
Université Libre de Bruxelles

GIVEN TALKS AND POSTER PRESENTATIONS

Selected Talks given at international conferences

- **Invited Speaker**, Groups and Rings Talking: Conference in Honor of Ángel del Río's 60th Birthday, Murcia, Spain; June 2020
- *Generators for discrete subgroups of 2-by-2 matrices over rational quaternion algebras*, Conference Groups St Andrews, Birmingham, United Kingdom; August 2017
- *Generators for discrete subgroups of 2-by-2 matrices over rational quaternion algebras*, **Invited speaker**, Journées de Géométrie Hyperbolique, Fribourg, Suisse; Mars 2017
- *Units in Integral Group Rings via Fundamental Domains and Hyperbolic Geometry*, **Invited speaker**, Second joint Conference of the Belgian, Royal Spanish and Luxembourg Mathematical Societies, Logroño, Spain, June 2016
- *Generators for discrete subgroups of 2-by-2 matrices over rational quaternion algebras*, Conference Groups and their Actions, Bedlewo, Poland; June 2015
- *A Presentation for a Group Acting Discontinuously on a Direct Product of Copies of Hyperbolic Spaces*, Conference Brock International Conference on Groups, Rings and Group Rings, St. Catharines, Canada; July 2014

- *Generators and Relations for a discrete subgroup of $SL_2(\mathbb{C}) \times SL_2(\mathbb{C})$* , Conference Groups St Andrews, St Andrews, United Kingdom; August 2013
- *Units in integral group rings and hyperbolic geometry*, Forum des jeunes mathématiciennes-s, Institut Henri Poincaré, Paris, France; November 2012
- *Generators and Relations for a discrete subgroup of $SL_2(\mathbb{C}) \times SL_2(\mathbb{C})$* , Conference Groups, Rings and Group Rings 2012, Universidade de São Paulo, Ubatuba, Brazil; July 2012
- *Poincaré Bisectors and Application to Units*, Conference Groups, Rings, and Group-Rings, University of Alberta, Edmonton, Canada; July 2011

Colloquium Talks

- *Fermat's Last Theorem viewed by Monsieur Le Blanc*, SFB Kolloquium Regensburg, Germany; December 2015

Poster Presentations

- *Discontinuous actions of unit groups of orders in rational group rings $\mathbb{Q}G$* , Conference Locally Compact Groups Beyond Lie Theory, Université Catholique de Louvain-La-Neuve, Spa, Belgium; April 2013

STUDENT SUPERVISION

- 2015 Supervision of a Bachelor Thesis
Universität Bielefeld
- 2019 Supervision of a Bachelor Thesis
Vrije Universiteit Brussel

TEACHING EXPERIENCE

Lecturer for the following Courses

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| INLEIDING GROEPENTHEORIE | Introduction to Group Theory, 1st year Bachelor in Mathematics
Vrije Universiteit Brussel
Spring 2019 |
| ELEMENTARE ZAHLENTHEORIE | Elementary Number Theory, Bachelor in Mathematics
Universität Bielefeld
Spring 2017 |

Seminars given to students

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| SEMINARIE ACTUELE WETENSCHAPPEN
EN ZAMENLEVING | seminar where mathematicians speak about their job
1st year Bachelor in Mathematics VUB
2019-2020 |
| PROSEMINAR COXETER GRUPPEN | Introduction to Coxeter Groups,
2nd year Bachelor in Mathematics Bielefeld
Spring 2015 |

Teaching Assistant at Universität Bielefeld for the following Courses

ANWENDUNGEN DER MATHEMATIK	Applications of Mathematics, Master Primary School Teachers Fall 2016
ALGEBRAISCHE ZAHLENTHEORIE	Algebraic Number Theory, Master in Mathematics Spring 2016
ANALYSIS 2	Analysis, 1st year Bachelor in Mathematics Spring 2016
ALGEBRA 1	Introduction to Group Theory, 2nd year Bachelor in Mathematics Fall 2015
GRAPH THEORY II	Follow up on basic Graph Theory, Master in Mathematics Spring 2015

Teaching Assistant at Vrije Universiteit Brussel for the following Courses

DIFFERENTIAALMEETKUNDE	Differential Geometry, 2nd year Bachelor in Mathematics/Physics Fall 2018, 2019
DIGITALE WISKUNDE	Digital Mathematics, 2nd/3rd year Bachelor in Mathematics/Informatics Spring 2018
INLEIDING GROEPENTHEORIE	Introduction to Group Theory, 1st year Bachelor in Mathematics Spring 2018, 2014, 2013, 2012, 2011
KANSTHEORIE	Probability Theory, 2nd year Bachelor in Mathematics Spring 2013
LINEAIRE ALGEBRA	Linear Algebra, 1st year Bachelor in Biology and Geography Fall 2013
RING- EN MODUULTHEORIE	Ring and Module Theory, 2nd year Bachelor in Mathematics Fall 2012, 2011, 2010

Assistant of Teaching Assistant at Université Libre de Bruxelles for the following Course

ALGÈBRE LINÉAIRE | Linear Algebra, 1st year Bachelor in Physics
Fall 2009

Student Support Sessions in Mathematics at Université Libre de Bruxelles

GUIDANCES EN MATHÉMATIQUES | Support in Mathematics, 1st Bachelor,
all students of the Faculty of Science
Fall 2008, Spring 2009

Tutoring Courses in Mathematics for High School Students

COURS DE RATRAPAGE | Tutoring courses in mathematics for high school students
organized by Lycée Classique Diekirch
classes of 5 to 10 students
2 weeks in September from 2004 to 2009

OUTREACH ACTIVITIES

Large Audience Mathematical Outreach Activities

BRIGHT CLUB | During Bright Club, scientists are transformed
into stand-up performers and deliver a comedy set around
their life and work as a researcher
Wtnschap.be and Vrije Universiteit Brussel
https://www.youtube.com/watch?time_continue=2&v=HpcEsVI8ccc
March 2019

MATHS JAM SESSION | Co-organization of the evening program of the large audience
conference *The Beautiful Impact of Mathematics in Society*
organized by the VUB
September 2016

Talks given to students

- *Einheiten in ganzzahligen Gruppenringen mithilfe von hyperbolischer Geometrie* (Units in Integral Group Rings with the Help of Hyperbolic Geometry), Upstream Perspective, Universität Heidelberg, December 2016
- *Die Jagd nach Primzahlzwillingen und warum 2 und 70.000.000 ganz nah beieinander sind* (Chasing Twin Primes and why 2 and 70.000.000 are very close to each other), Weil Frauen Naturwissen schaffen, Zentrum für interdisziplinäre Forschung in Bielefeld, March 2016

- *Fermats letzter Satz aus der Sicht von Monsieur Le Blanc* (Fermat's Theorem and Monsieur Le Blanc), Netzwerktreffen Young Women in the CRC 701, Universität Bielefeld, June 2015
- *Les Maths et le Foot* (Mathematics and Football), Mathematikon, Université de Fribourg, November 2014
- *De stelling van Fermat en Monsieur Le Blanc* (Fermat's Theorem and Monsieur Le Blanc), Seminarie Actuele Wetenschappen en Samenleving, Vrije Universiteit Brussel, December 2012
- *Le Théorème de Fermat vu par M. Le Blanc* (Fermat's Theorem and Monsieur Le Blanc), Brussels Summer School of Mathematics, Université Libre de Bruxelles, August 2012

Activities for Highschool pupils

RACONTE-MOI LES MATHS	two short movies around the theme of integral calculus produced by high school pupils in cooperation with Nighthawks Production ASBL financed by the Innoviris STEM Project <i>Les maths autrement</i> 2019, 2020
MATH.EN.JEANS	mathematics program outside the classroom in charge of the first Flemish pupils participating 2019, 2020
ANN KIEFER - MATHÉMATICIENNE PORTRAITS FILMÉS DE FEMMES SCIENTIFIQUES	short movies about female scientists produced by high school pupils https://vimeo.com/channels/1450903 February 2016
DE GEHEIME GESCHIEDENIS: WISKUNDE EN CODETHEORIE	Workshop on the mathematics behind Coding Theory given to Dutch-speaking students of Belgian high schools 2012, 2013
DE DONKERE MATERIE VAN DE GETALLENAS	Workshop on number sets and constructible numbers given to Dutch-speaking students of Belgian high schools 2011, 2012, 2013
PRINTEMPS DES SCIENCES	Scientific Exposition organized by ULB Student Support for one group of participating students 2012
MATHS LUDIQUES: LES ORIGAMIS	Workshop on the link between origamis and mathematics given to French-speaking students of Belgian high schools 2008, 2009, 2010

Activities for Primaryschool children

KINDERUNIVERSITEIT	Activity around mathematics and football for children aged 10 to 12 Vrije Universiteit Brussel May 2019
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ORGANISATIONAL TASKS

2019-2020	Member of the Council of the Math Department to represent the postdoctoral researchers Vrije Universiteit Brussel
JUNE 2019	Local Organizer of the Conference <i>Groups, Rings and Associated Structures</i> Spa, Belgium
FEBRUARY 2018 -	Organizer of the ArXiv-seminar Vrije Universiteit Brussel
JUNE 2017	Local Organizer of the Conference <i>Groups, Rings and the Yang-Baxter Equation</i> Spa, Belgium
2016-2019	Local Organizer of the Conference <i>The Beautiful Impact of Mathematics in Society</i> Vrije Universiteit Brussel
2015-2017	Member of <i>Young Women in the CRC 701</i> initiative organizing meetings aimed to female students to come in contact with female researchers and exchange experiences
2012-2014	Local Organizer of <i>Wiskunnend Wiske wedstrijd</i> Mathematics Competition for high school students with several rounds, organized by the Vrije Universiteit Brussel

RESEARCH STAYS

NOVEMBER 2019	Research Stay at Universidad de Murcia Murcia, Spain Research Group of Prof. Ángel del Río
OCTOBER 2014 - DECEMBER 2014	Research Stay at Université de Fribourg Fribourg, Switzerland Research Group of Prof. Ruth Kellerhals
2012 - 2014	several research stays of 3 weeks at Universidad de Murcia Murcia, Spain Research Group of Prof. Ángel del Río

LANGUAGES

MOTHER TONGUE:	Luxembourgish
ADVANCED LEVEL:	French, German
FLUENT:	English, Dutch
GOOD:	Spanish